

Reference 1:

Japanese Patent Laid-Open Application Sho 49 (1974) - 33690

Laid open: March 28, 1974

Japanese Patent Application Sho 47 (1972) - 73593

Filed: July 22, 1972

Inventor(s): Hiromi Miyamoto

Applicant: TERUMO CERAMIC CORPORATION

Title: METHOD FOR SEPARATING AND DISPENSING SPECIMEN AND APPARATUS THEREFOR

Claims:

1. Method for separating and dispensing specimen comprising the steps:
 performing centrifugal separation of specimen; and
 aspirating supernatant and dispensing it into specific sample-receiving elements, while keeping the correspondence relationship between the specimen and the supernatant;
 characterized in that both of the steps are automatically performed sequentially.
2. Apparatus for automatically separating and dispensing specimen comprising:
 a centrifugal separator (1) in which a plurality of sample tubes can be loaded; and
 a pipette part (2) for aspirating supernatant of specimen separated by the centrifugal separator, and dispensing it into specific sample-receiving elements of a sampler (3), said specific sample-receiving elements corresponding to the sample tubes.

Brief description of the drawings:

- Fig. 1 is an elevation view;
- Fig. 2 is a plan view of Fig. 1;
- Fig. 3 is a partial elevation view illustrating a centrifugal separation part;
- Fig. 4 is a partial side view of the centrifugal separation part;
- Fig. 5 is a plan view of the centrifugal separation part;
- Fig. 6 is an elevation view of a pipette part;
- Fig. 7 is a plan view of the pipette part;
- Fig. 8 is a right side view of the pipette part;
- Fig. 9 is a left side view of the pipette part;
- Fig. 10 is a plan view of a sampler part;
- Fig. 11 is a partially cut-out elevation view of the sampler part;
- Fig. 12 is an elevation view illustrating a mechanism of a nozzle arm;
- Fig. 13 is a side sectional view illustrating the nozzle arm;
- Fig. 14 is a sectional view along the line 14-14 in Fig. 13;
- Fig. 15 is a chart diagram illustrating the operation of each mechanism.

1 ... centrifugal separator
2 ... pipette
3 ... sampler
4 ... rotor
5 ... rotary shaft
6 ... sample tube
7 ... loading hole
8 ... coupling
9 ... motor
10 ... plate for position detection
11 ... detector for reference position
12 ... detector for rotational position
13 ... brake
14 ... pressure element
15 ... positioning pin
16 ... V-groove for positioning
17 ... pushing-up mechanism
18 ... through hole
19 ... rack
20 ... pushing-up pin
21 ... chain
22 ... motor
23 ... pinion gear
24 ... actuation element
25,26 ... limit switch
27 ... interface detector
28 ... light emitter
29 ... photodetector
30 ... support frame
31 ... aspiration nozzle
32 ... nozzle arm
32a,32b ... support arm
33 ... pivot head
34 ... bearing
35 ... chain
36 ... pulse motor
37 ... first washing tank
38 ... second washing tank
40 ... aspiration chamber
41 ... syringe
42 ... pipette nozzle
43 ... piston
45 ... feed screw
46 ... pulse motor
48 ... guide lever
49 ... female screw
50 ... ball screw
51 ... motor
52,53,54,55,56,57 ... microswitch
58 ... discharge valve
59 ... turn table
60 ... sample receiving element
61 ... waste liquid tank
62 ... electromagnetic solenoid
63 ... feed pipe
64 ... aspiration valve
65 ... electromagnetic solenoid

{Figures} Reference /

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Fig. 1

★ 1 図

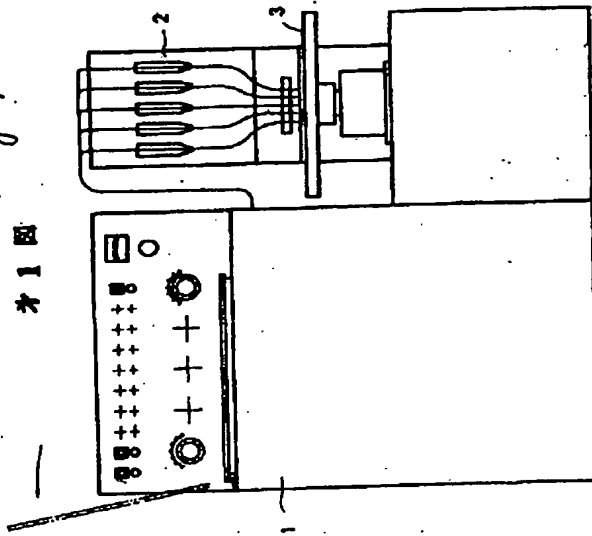
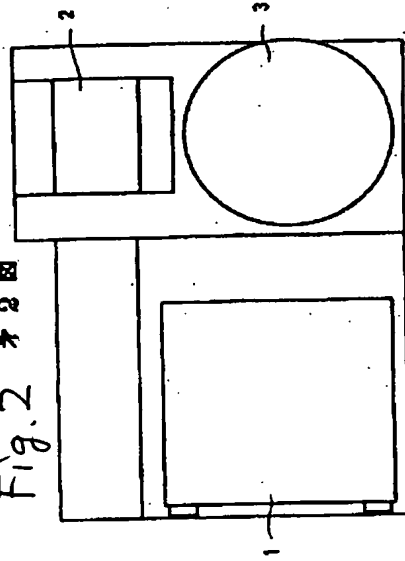
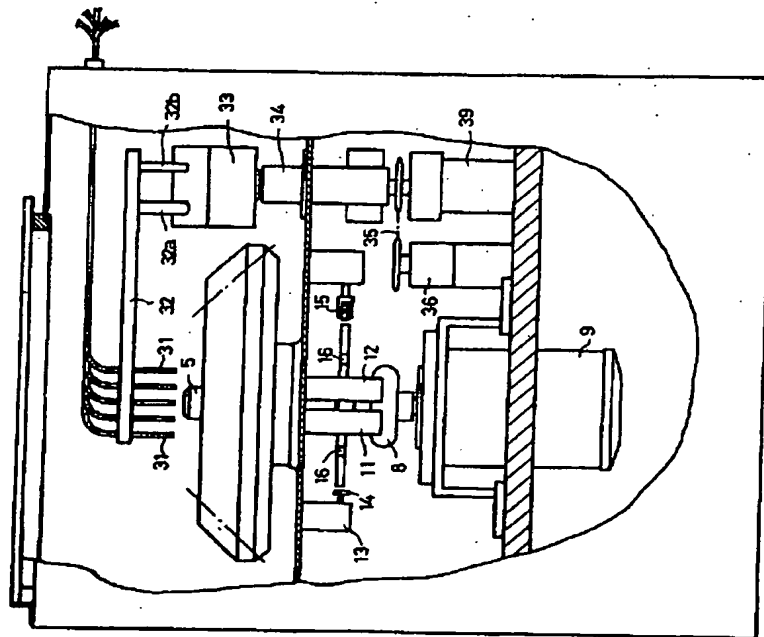


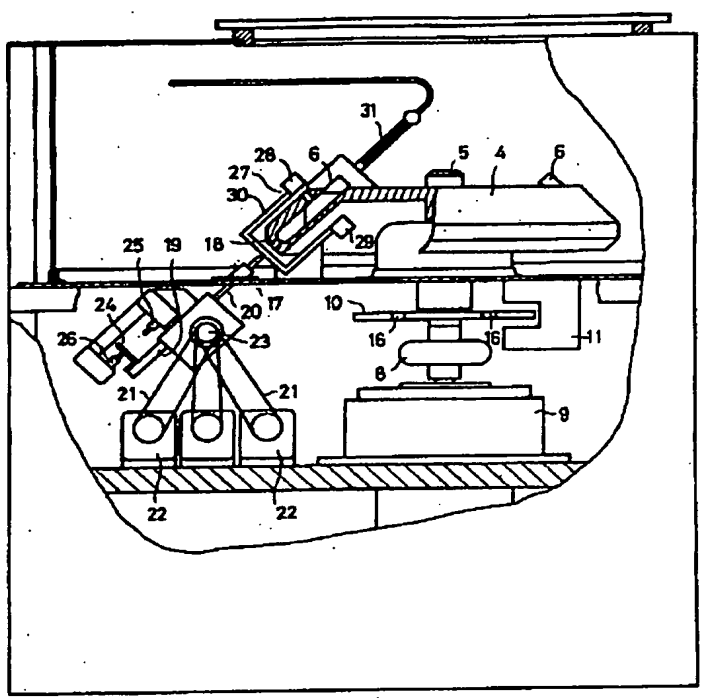
Fig. 2 ★ 2 図



★ 8 図 Fig. 3



★ 4 圖 Fig. 4



★ 5 圖 Fig. 5

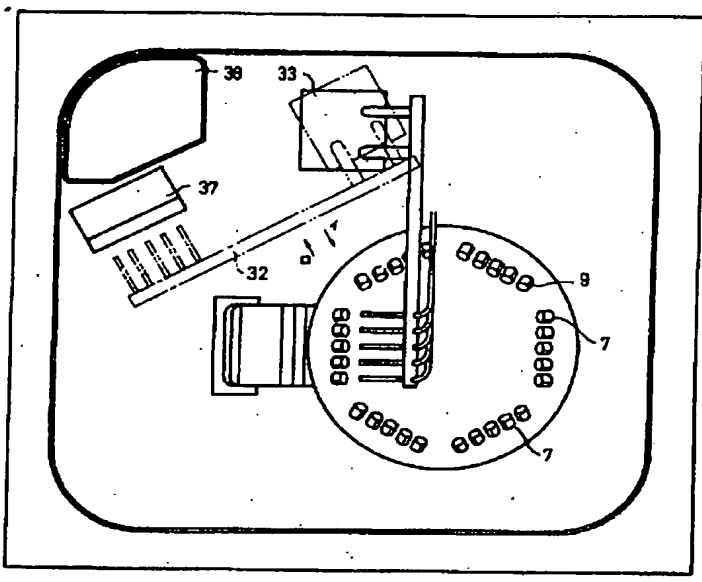


Fig. 6

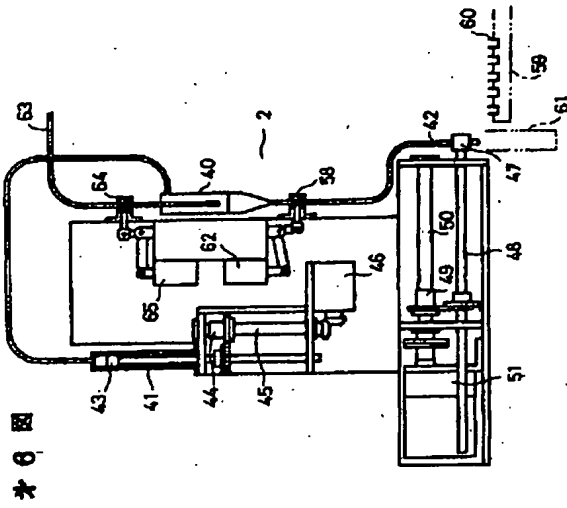


Fig. 7

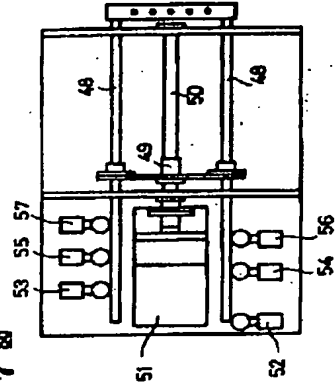


Fig. 8

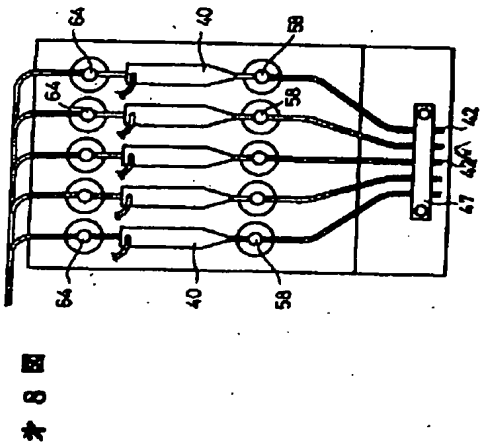
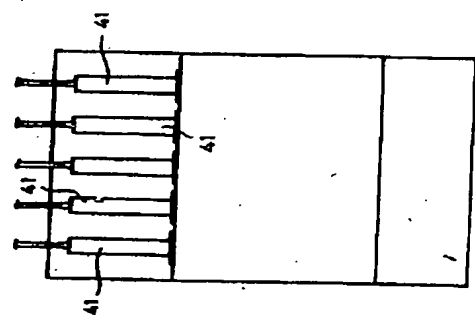
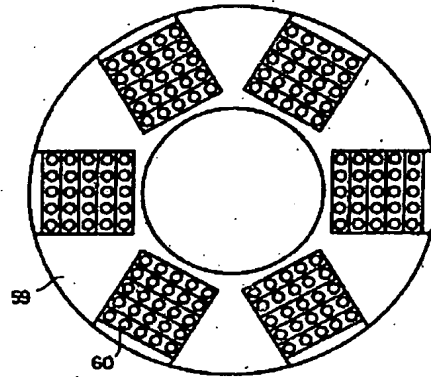


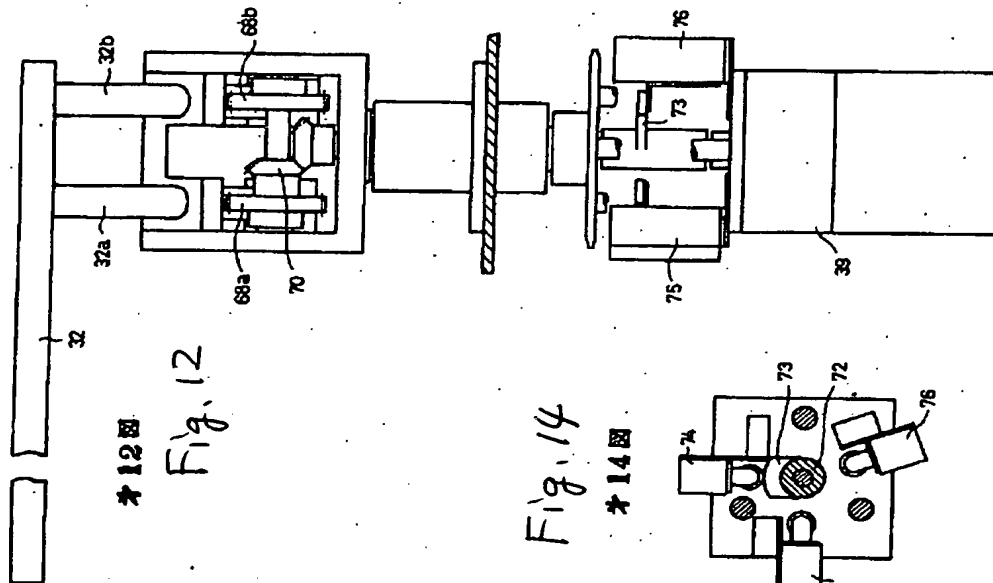
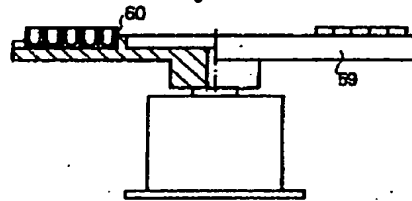
Fig. 9



★ 10 図 Fig. 10

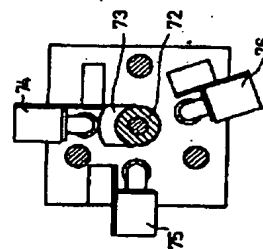


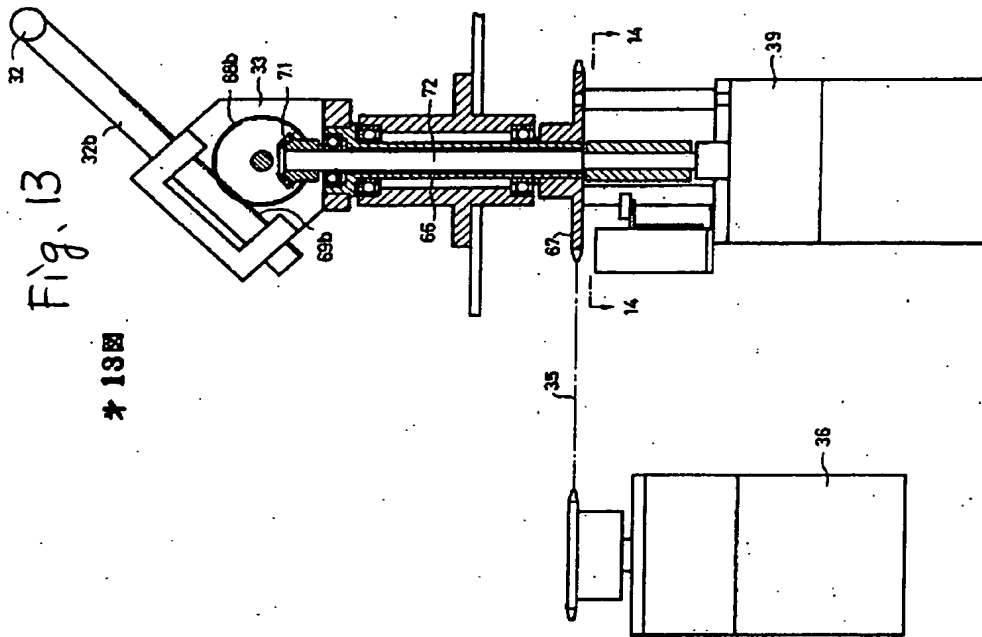
★ 11 図 Fig. 11



★ 12 図 Fig. 12

★ 14 図 Fig. 14





★ 15 図 Fig. 15

